CLAIMS

1. A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including a plurality of corrosive tracks exposed to the corrosive media, each said corrosive track being formed as a patterned conductive thin film track and following a path which includes a plurality of bends, at least two of which are of opposite curvature.

2. A microsensor according to claim 1, wherein each said corrosive track has a width which is substantially constant across its length.

3. A microsensor according to claim 1 or 2, wherein each said corrosive track is formed to meander across a surface portion of a common substrate.

4. A microsensor according to claim 3, wherein each said surface portion comprises one of a set of linear corridors on the common substrate.

5. A microsensor according to any preceding claim, wherein the minimum separation between adjacent corrosive tracks is preferably at least as great as the average width of said corrosive tracks.

6. A microsensor according to any preceding claim, wherein the corrosive tracks are formed with mutually inverted generally U-shaped bends.

7. A microsensor according to any preceding claim, wherein each said bend has a minimum radius of curvature which is greater than half the average width of said corrosive tracks.

8. A microsensor according to any preceding claim, comprising a resistivity sensor having said plurality of corrosive tracks arranged to provide a measurable variation in resistivity in response to prolonged exposure to corrosive media.

9. A microsensor according to claim 8, comprising a reference sensor arranged to provide a measurable variation in resistivity in response to changes in temperature, the reference sensor having a similar temperature dependence as said resistivity sensor.

10. A microsensor according to claim 9, wherein the reference sensor takes substantially the same form as said resistivity sensor.

11. A microsensor according to claim 9 or 10, wherein said reference sensor is formed in an overlapping arrangement with said resistivity sensor.

12. A microsensor according to any preceding claim, comprising a galvanic sensor having at least one said corrosive track made of a first metallic material and at least one further thin film track made of a second, different, metallic material, the tracks being arranged to provide a measurable variation in galvanic voltage in response to exposure to an electrolyte.

13. A microsensor according to claim 12, wherein the galvanic sensor comprises a plurality of said corrosive tracks and a plurality of said further tracks, arranged in an interdigitated pattern.

14. A microsensor according to any preceding claim, comprising a resistance thermometer sensor, a platinum resistance thermometer for example, arranged for measuring a temperature in the area in which the microsensor is mounted.

15. A microsensor according to any preceding claim, wherein the corrosive tracks are made of a metallic alloy.

16. A microsensor according to claim 15, wherein the corrosive tracks are made of an aluminium alloy.

17. A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including at least one corrosive track exposed to the corrosive media, said at least one corrosive track being formed as a patterned conductive thin film track made from a metallic alloy having a main metal constituent and at least one alloying metal constituent.

18. A microsensor according to claim 18, wherein said at least one corrosive track is made of an aluminium alloy.

19. Apparatus comprising a metallic component made from a metallic alloy in bulk form and a microsensor according to claim 17 or 18 mounted in situ

adjacent a location in the component for detecting corrosive media acting on the bulk alloy,

the bulk alloy having a main metal constituent which is the same as the main metal constituent of the track alloy, and at least one alloying metal constituent which is the same as the alloying metal constituent of the track alloy.

20. Apparatus according to claim 19, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 3% of the total constituents of the bulk alloy.

21. Apparatus according to claim 20, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 1% of the total constituents of the bulk alloy.

22. Apparatus according to any of claims 19 to 21, further comprising a second metallic component made from a different metallic alloy in bulk form and a second microsensor according to claim 17 or 18 mounted in situ adjacent a separate location, which is in the second component, for detecting corrosive media acting on the different bulk alloy,

the different bulk alloy having a main metal constituent and at least one alloying metal constituent,

the second microsensor having at least one thin film track made from a metallic alloy which is different to the metallic alloy from which the at least one track of the first-mentioned microsensor is made and having a main metal constituent which is the same as the main metal constituent of the different bulk metallic alloy, and at least one alloying metal constituent which is the same as the main alloying metal constituent of the different bulk metallic alloy.

23. An aircraft including apparatus according to any of claims 19 to 22.

24. A method of manufacture of a microsensor according claim 17 or 18, comprising depositing the alloy of said at least one thin film track onto a

substrate to form a thin film and annealing the thin film to encourage metallic grain growth.

25. A method according to claim 24, wherein the depositing step comprises sputtering the alloy of the said at least one thin film track onto the substrate.